Original Article

AN EVALUATION OF DOCTORS' PRESCRIBING PERFORMANCE IN NIGERIA

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ABSTRACT

Objective: To assess prescribing indicators and describe influences on doctors' prescribing in Nigeria

Methodology: Doctors' prescriptions from eight public and nine private hospitals were surveyed, and the WHO prescribing indicators calculated. Age, sex, academic background, drug information sources, access to the National Essential Medicines List and the strongest influence(s) on prescribing were evaluated. Data were analysed using SPSS.

Results: Eight hundred thirty three prescriptions from 28 doctors were assessed. Age and working experience were 38.8 ± 8.1 and 13.4 ± 8.4 years respectively. Pharmaceutical representatives were the most popular sources of drug information; influences during internship contributed most to current prescribing. Average number of drugs per encounter and percent encounters with injections were higher in private hospitals (3.96, p = 0.01; 38.51; p = 0.01 respectively); doctors aged >40 years prescribed more antibiotics (% encounters with antibiotics 52.63; p = 0.03).

Conclusion: Pharmaceutical detailing is an important influence on doctors' prescribing and the internship is a critical and vulnerable period. Both should be targeted in interventions to improve prescribing.

KEY WORDS: Prescribing, Doctors, Influences, Nigeria, WHO prescribing indicators.

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INTRODUCTION

The writing (and discussion) of a prescription is an important terminal activity in the process of rational prescribing.[1] Before writing a prescription an accurate diagnosis ought to be made and with that there must be a clear understanding of the pathophysiology of the disease in order to make the necessary decisions on whether or not to treat.[1]

Rational prescribing requires that the right medicine be chosen for the right patient and administered in the right dosage and formulation for the right duration, and at a cost that is affordable to the individual and his/her community.[2] It also requires that the prescriber takes into consideration individual susceptibilities to adverse drug reactions and the possibilities of interactions between prescribed medicines and other medicines or foods.[1]

The point has been made that prescribing should not be "undertaken 'unadvisedly,

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lightly or wantonly,[1] but the preparedness of doctors for this important undertaking is doubtful.

Even in developed countries insufficient attention is given to training in clinical pharmacology and therapeutics at undergraduate as well as postgraduate levels.[1,3,4] The situation is, if anything, worse in developing countries where pharmacology at undergraduate level is for the most part taught in the pre-clinical years with emphasis on basic pharmacology. The resulting gaps in knowledge and prescribing skills may not be appreciated or given the required attention by trainers in medical undergraduate and postgraduate education, but the pharmaceutical industry spotted this gap relatively early[3] and is using it to their advantage.

The objectives of this study were therefore to assess prescribing performance of doctors using the WHO prescribing indicators as well as identify influences on prescribing.

METHODOLOGY

The study was carried out in the cosmopolitan city of Benin, in Southern Nigeria. Ethical approval was obtained from the University of Benin Teaching Hospital Ethics Committee.

In a survey to assess prescription writing among doctors in Benin City, Nigeria, each of the doctors randomly selected to have their prescriptions surveyed was requested to complete and return a data sheet which was designed to provide information on age, sex, academic background, continuing medical education activities, drug information sources and access to the National Essential Medicines List (EML). Respondents were also requested to indicate what they considered the strongest influence(s) on their current prescribing practices.

Doctors were randomly selected from all the eight (8) public and nine (9) private hospitals in Benin City. In hospitals where there were fewer than five doctors, all the doctors were included in the sample. Where there were more than five doctors a maximum of five was selected by simple random sampling.

The most recent prescriptions for each doctor were collected retrospectively, until (in most cases) 30 prescriptions were obtained. The WHO prescribing indicators were calculated for each doctor: average number of drugs per encounter, percentage of drugs prescribed by generic names, percentage of encounters in which an antibiotic was prescribed, percentage of encounters in which an injection was prescribed, and percentage of drugs prescribed from the EML.

The data were analysed using the Statistical Package for the Social Sciences (SPSS) version 11.0. Mean values for the prescribing indicators were compared between public and private hospitals using the Student t test; non-parametric statistics (Kruskal Wallis tests) were used for comparison between multiple means. The data are presented as means (or proportions) with standard deviation; statistical significance was placed at P value equal to, or less than 0.05

RESULTS

Twenty-eight doctors completed and returned the data forms, giving a response rate of 70%. Ages ranged from 28 to 56 years (38.8 ± 8.14 years), and working experiences from 2 to 32 years (13.4 ± 8.43 years). The majority of respondents (82.1%) were males; 67.9% (19) worked in public hospitals. Fifteen respondents (53.6%) had varying levels of postgraduate training. Seven (25%) had not participated in any Continuing Medical Education (CME) activity in the preceding three years; 17 (60.7%) held clinical meetings in their respective hospitals at varying frequencies.

The CME opportunities most frequently used by doctors were seminars and workshops organised in the respective hospitals, and annual or bi-annual national workshops/courses organised by professional associations (Fig-1). All respondents used at least two sources of drug information; the majority used five. Representatives of pharmaceutical companies were the most frequently cited sources of drug information, followed closely by the Monthly Index of Medical Specialties (MIMS) – Table-I.

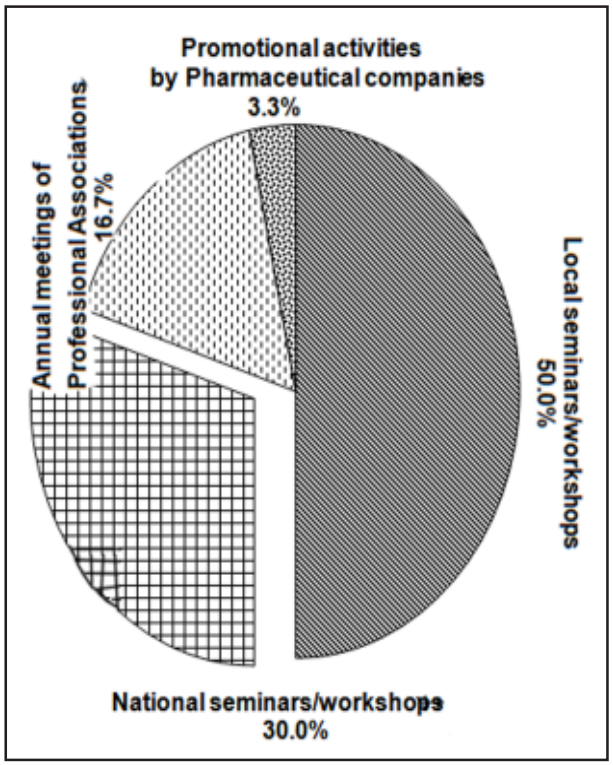

Fig-1: Doctors' Avenues for CME in the preceding 3 years

The latter was the most preferred source of drug information. Only one respondent had personal access to a copy of the EML. Twelve respondents (42.9%) had no copy of the EML in their hospitals. None of the respondents who cited the EML as their preferred source of drug information had personal copies.

The majority of respondents indicated that their current prescribing had been most greatly influenced by their training during internship. Promotional activities by representatives of pharmaceutical companies influenced prescription writing slightly more than training in medical schools (Fig-2).

Table-I: Sources of drug information used by doctors

Representatives of Pharma companies	22.00%
MIMS	20.8%
Journals	13.2%
Medical Books	12.1%
Colleagues	8.8%
British National Formulary	7.7%
Lectures, seminars, workshops	5.5%
National Drug Formulary	5.5%
Others	4.4%

The WHO Prescribing Indicators were similar for doctors in public and private hospitals except that doctors in private hospitals prescribed more medicines and injections per encounter (Table-II). Prescribing indicators were similar between younger and older doctors but doctors who were over 40 years old prescribed significantly more antibiotics (Table-III).

DISCUSSION

We consider the response rate obtained in this study satisfactory. Our study sample provided a mix of doctors that is fairly representative of the Nigerian medical practice scenario across public and private sectors.

On the average, doctors in public and private hospitals differed significantly in two of the five WHO core prescribing indicators[5] - the average number of drugs per encounter and percentage of encounters in which injections were prescribed. Our findings suggest an improvement in these indicators when compared with two earlier studies in the same locality

Table-II: Prescribing Indicators for Doctors in Public and Private Hospitals

	Public Mean (SD)	*Private Mean (SD)*	*P value*
1. Average number of drugs per encounter	3.21 (0.65)	3.96 (0.67)	0.01
2. % drugs in generic names	54.37 (21.70)	46.52 (8.61)	0.31
3. % encounters with antibiotics	38.34 (20.18)	47.93 (15.12)	0.22
4. % encounters with injections	19.35 (15.68)	38.51 (20.69)	0.01
5. % of drugs prescribed from EML	95.02 (5.30)	95.09 (2.77)	0.97

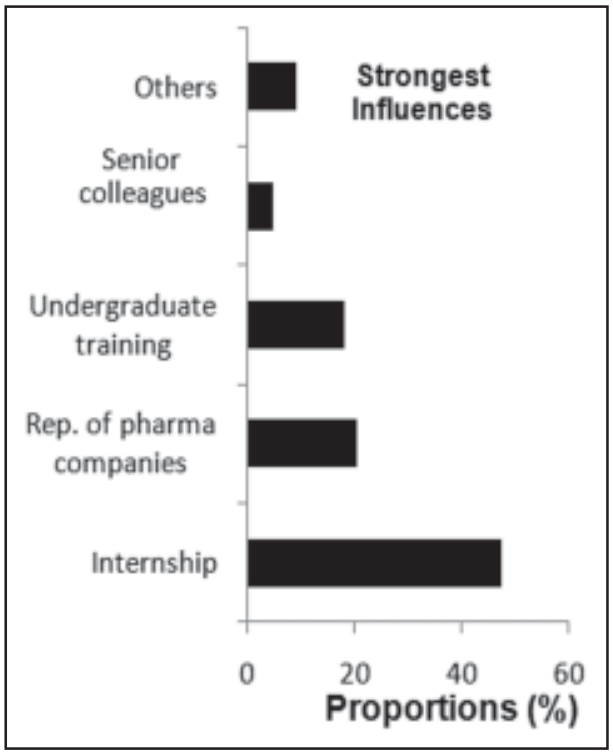

Fig-2: Strongest influences on doctors' prescribing.

which showed worse prescribing performance.[6,7] However, the quality of prescribing is still unsatisfactory, going by the population reference values determined for the locality in which this study was undertaken.[8]

The reasons why more medicines *and* injections are prescribed in private hospitals may be that the 'lay' public usually relate their bills to the number of medicines they get, and patients are more disposed to paying higher bills for more medicines, and when injections are included in their prescriptions. There are ongoing interventions by the Nigerian government to inform the Nigerian public via the media about the dangers inherent in inappropriate use of injections, and it remains to be seen how this will impact on prescribing indicators.

The finding that doctors aged over 40 years prescribed antibiotics significantly more than younger doctors may not be too easily explained, but one reason may be that older doctors are less likely to change their practices in line with recent calls for more rational use of medicines than their younger colleagues.

Irrational prescribing cannot be divorced from the influence of industry. The ideals of the WHO-sponsored rational prescribing and rational use of medicines are contrary to those of industry-sponsored promotional activities. For example rational prescribing requires that all medicines be prescribed in generic names, whereas drug promotion encourages brand name prescribing; rational prescribing requires that every medicine prescribed is justified whereas promotional activities encourage the prescription of a pill for every ill.

Continuing Medical Education (CME) is one of the many influences on prescribing.[9,10] There were no strict national regulations for CME for doctors at the time this study was conducted, and the need to strengthen CME activities among doctors in Nigeria is highlighted by our findings.

The increasing influence of the pharmaceutical industry on doctors' prescribing has been alluded to in several anecdotal and published reports.[11,12] The industry and its representatives have been shown to be a main source of drug information, and influence prescribing through sponsorships of CME activities.[13-15] (among other strategies). Although many doctors do not admit their own susceptibilities, they do

Table-III: Prescribing Indicators by age (Less than and older than 40 years)

	<40 yearsMean (SD)	*>40 yearsMean (SD)*	*P value*
1. Average number of drugs per encounter	3.36 (0.70)	3.43 (0.80)	0.81
2. % drugs in generic names	55.89 (21.23)	45.76 (13.67)	0.20
3. % encounters with antibiotics	35.46 (18.05)	52.63 (17.68)	0.03
4. % encounters with injections	20.17 (17.43)	32.38 (22.10)	0.13
5. % of drugs prescribed from EML	95.20 (4.03)	94.33 (6.08)	0.67

acknowledge their colleagues' susceptibilities to pressures from industry[11] and in spite of a general admission that information from pharmaceutical representatives is biased, doctors generally find such information 'useful'.[1]

The popularity of the MIMS and representatives of drug companies as sources of drug information should be viewed critically. About sixty percent of junior Nigerian doctors in a study carried out in two public hospitals in Nigeria identified the MIMS as their main source of drug information[16]. In this study industry representatives took first place as a source of drug information used by doctors (although the MIMS was the most preferred). The MIMS is a commercial source of drug information and there is evidence that the information provided is insufficient in many respects, with many advertorial claims that are not supported by scientific evidence.[17]

The avenues for industry influence are more than what is apparent from Fig-1 because the pharmaceutical industry is also visible in many academic meetings sponsored by individual hospitals and professional associations at local and national levels. This study has further demonstrated the importance of promotional activities by the pharmaceutical industry on prescribing, a big challenge to the rational use of medicines, and for which government intervention is required if meaningful regulation is to be achieved.[12]

The specific influences - positive or negative- on respondents' prescribing during their respective internships were not explored in our study. However if we consider that graduating doctors have their first real contacts with pharmaceutical representatives during internship, the influence of industry on doctors' prescribing would be larger than figure 3 suggests – because of the portion due to industry that is submerged in influences during internship.

The importance of the internship year as a potential practice-saving intervention period is emphasized by our findings. Since attitudes that are formed earlier in lives (and practices) are more likely to endure[11] it is reasonable that interventions to promote rational prescribing among doctors should target this crucial period in doctors' careers.

We realise the limitations of our quantitative assessments of influences on prescribing. Qualitative research into such influences might provide further insights and we suggest this approach for future research.

CONCLUSIONS

Across a wide range of doctors in the public and private sectors in Nigeria prescribing indicators are largely similar, but doctors in private hospitals prescribe significantly more medicines and injections per encounter. Current prescribing practices appear to be most predominantly influenced by training during internship and by promotional activities of industry.

These findings highlight the need to continue, and reinforce interventions to improve rational prescribing. The importance of the 12-month internship period as a target for interventions to improve rational prescribing is highlighted, as well as the need to effectively regulate promotional activities of industry.

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